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PATENT SPECIFICATION

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COMPLETE SPECIFICATION.

Improved Manufacture of Decolorised, Odourless and Tasteless Albumins from Blood.

We, ADRIANUS JOHANNES LEONARDUS TERWEN, of 22, Saksen Weimarlaan, and CORNELIS JOHANNVS CHRISTIAAN VAN HOOGENHUYZE, of 8, Banstraat, both of Amsterdam, Holland, Medical Surgeons, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

The manufacture of colorless, odourless and tasteless albumins from blood by treating blood with hydrogen peroxide after removal of the catalytic properties of the blood, is known. For this removal sulphurous acid or ammonia has been named as preferable. After the action of these agents alkali, preferably ammonia, is added to the liquid, whereupon this is boiled with hydrogen peroxide, and the albumins so far as they have not yet been precipitated, are separated completely by neutralisation.

The albumens thus obtained have, however, the drawback that they do not dissolve in water. Also other known processes in which hydrogen peroxide is used as decolorising agent have this same disadvantage.

By the present invention, soluble, decolorised, odourless and tasteless albumins may be obtained from blood by first causing a diluted acid to act for a considerable time upon the blood and then adding hydrogen peroxide and allowing this also to act for a considerable time in contact with the blood and finally neutralising the added acid, whereby the feebly alkaline solution thus obtained is de-colorised at ordinary temperature without a precipitate being formed.

It is an advantage of this process that it occurs wholly at ordinary temperature and all heating with chemicals is avoided, while water-soluble albumins are obtained. To isolate the latter in dry form, the decolorised liquid is evaporated, preferably at a low temperature, for instance in a vacuum. Thus the albumin remains soluble; the decolorised liquid may be sterilised by boiling even above 100° C. without the albumins losing their solubility.

The essential characteristic of this process consists in the facts that by addition of the acid the oxyhæmoglobin is split up into hæmatin and globin, whereby at the same time the destruction of the catalase begins, and that to this acid solution hydrogen peroxide is added, which starts the decolorisation of the hæmatin, while at the same time the destruction of the catalase is completed. By neutralisation of the acid the decolorisation is then completed.

If the acidified blood is first neutralised and afterwards allowed to react the

hydrogen peroxide, a decolorisation can indeed be obtained, but since the catalase is still insufficiently destroyed, there is a strong evolution of oxygen and therefore foaming. From this it is obvious that the hydrogen peroxide in the acid liquid plays an important part in rendering the catalase inactive.

To illustrate the invention the following example is given:—

100 cc. of preferably defebrinated blood are mixed with 100 cc. of 0.3 N-hydrochloric acid. The red blood corpuscles are dissolved and the red colour passes into black, owing to the splitting up of the hæmoglobin into black hæmatin and globin. After 24 hours, during which the liquid becomes more or less syrupy, there are added 150 cc. of hydrogen peroxide of 3 *per cent.* strength. The liquid becomes again thin. In the course of several hours there is a very small evolution of oxygen. After 24 hours the liquid is partly decolorised, having remained clear. Complete decolorisation is not attained by letting the liquid stand longer. 33 cc. of N-alkali are now added, that is to say a small excess in relation to the hydrochloric acid added. After a few hours the decolorisation is finished, there being a small evolution of oxygen. The liquid remains clear throughout. It may be evaporated in a vacuum, whereby the albumin remains soluble. It may be boiled and even sterilised above 100° C. without becoming turbid and without the albumins obtained by evaporation becoming insoluble.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

A manufacture of decolorised, odourless and tasteless albumins from blood by first treating the blood for a considerable time with a diluted acid, then adding hydrogen peroxide and only after a considerable time neutralising the added acid, whereby the decolorisation is always completed at room temperature.

Dated this 12th day of August, 1918.

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